



BREAKTHROUGHS FOR THE MARKETPLACE

The heavy hitters in technology commercialization have to be quick on their feet. That's because time to market can mean as much as the innovations themselves. At Battelle, we help speed concepts from prototypes to products to commercial markets. We have a lot of resources at our fingertips: World-class science and technology experts. The best in state-of-the-art facilities. And plenty of market savvy. Right now, we're zeroed in on the agrifood, energy and health care markets. We've developed strong, long-lasting relationships with customers in those industries, like Delphi and Eli Lilly and Company. We've also had a hand in commercializing technology developed at the DOE national labs that we manage or co-manage. And, of course, we continue to spin out new businesses to meet market demand—from pharmaceuticals and optical networks to flat panel displays. It's that kind of nimbleness that provides great benefits for our customers.





Battelle is developing a unique spray treatment that uses electric-field-effect technology to ensure total leaf coverage of agrochemicals.

Careless or excessive agrochemical spraying can destroy beneficial insects, harm wildlife, and taint drinking water. To address the problem, Battelle is developing a unique spray treatment that uses electric-field-effect technology (EFET) for the precise application of agrochemicals. Pesticides, herbicides and fertilizers will hit their targets—and nothing else. That means cost savings, increased yield and environmental compliance. Developing commercial applications for the global agriculture and food system is not new for Battelle. For the Ohio Soybean Council, we’ve developed several commercial applications for soybeans—from industrial-strength hand soap to toner for copiers and laser printers. This renewable resource could soon be an alternative to the raw materials used to produce fuels, plastics, adhesives, paint, lubricants, and textiles. EFET and soybean research are two good examples of how Battelle is contributing to the supply of safe, nutritious food and other bio-based products to meet global demands.

Battelle’s soybean derivatives research has led to a variety of bio-based industrial products, including toner for copiers.



Battelle's long-standing relationship with Eli Lilly and Company has made living with diabetes a little easier. In 1996, Battelle began its first comprehensive design and development program for Lilly, leading to the successful launch of the HumaPen® Ergo—a lightweight, pocket-size insulin pen that can be used just about anywhere. Today, Battelle and Lilly continue to leverage each company's core strengths in an effort to bring the next generation of insulin injection systems to the worldwide market.



Battelle's combination of product development and technical expertise is helping Eli Lilly and Company develop its next generation of easy-to-use insulin pens. Other Battelle innovations in healthcare products include EFET-based inhalers for pulmonary drug delivery and blood sample analysis for cancer cells.

In Battelle's fight against cancer, our researchers are developing a new Rare Cell Detection technology for assessing the status of the disease in patients. Unlike other cancer diagnostic techniques, ours prepares a blood sample for microscopic examination in a single step, meaning it's both efficient and affordable. It's just another example



of how Battelle is providing timely, cost-effective, and scientifically advanced product solutions for the medical device, drug delivery, and biotherapeutic markets.

Battelle is developing novel spray techniques for manufacturing quick-dissolve pills.





Battelle is developing solid oxide and PEM fuel cells—clean and efficient energy sources with many commercial applications, including the automotive industry.

Battelle technologies can significantly improve the efficiency of primary sources of energy. That means more competitive energy companies, healthier returns for their shareholders, and affordable energy despite increasingly stringent environmental regulations. Part of the solution is solid oxide fuel cells—environmentally friendly and highly efficient sources of power. We've teamed with Delphi in cooperation with DOE to develop a solid oxide fuel cell auxiliary power unit that will enable more fuel-efficient electrical power for cars and lightweight trucks. Our other fuel cell research includes developing the advanced polymer electrolyte membrane, or PEM, fuel cells. "Simpler, cheaper, more reliable" are our design principles. We see all sorts of commercial applications for them, from long-lasting, reusable and affordable replacements for conventional disposable batteries to powering golf carts, recreational vehicles and medical equipment.



Battelle's PEM fuel cell research has wide commercial potential, like backup power sources for your home during power outages.



Battelle's \$6 million cleanroom addition will foster innovation for both our commercial and government customers.



In 2002, scanning technology developed at NREL was licensed to a solar technology company.

An inspection technology commercialized at Pacific Northwest National Laboratory is making homeland security a little tighter. Developed to inspect chemical weapons stockpiles, the Acoustic Inspection Device now is being used by U.S. Customs agents to monitor the 1.3 million passengers who cross our borders each day. The device can quickly identify the kind of liquid being stored in a sealed container and determine whether foreign objects, contraband or explosives are hidden inside. Commercialization successes also are commonplace at the other national labs Battelle manages or co-manages. At Oak Ridge National Laboratory, a carbon composite bipolar plate that separates cells in a fuel cell and acts as an electrode and gas barrier has been developed and licensed to Porvair Fuel Cell Technology. At Brookhaven National Laboratory, a synthetic growth factor technology for healing wounds and radiation protection was licensed to BioSurface Engineering Technologies. And at the National Renewable Energy Laboratory, a scanning system that maps performance parameters for solar cells was licensed to GT Solar Technologies.

U.S. Customs inspectors use acoustic inspection devices developed at PNNL to identify weapons and explosives.



BATTELLE VENTURES

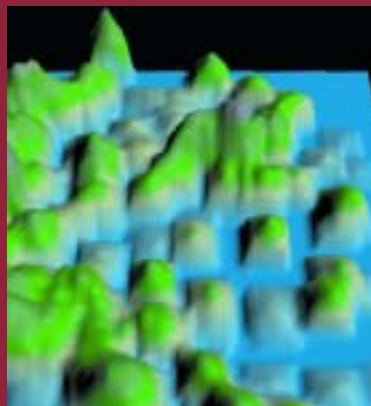
Battelle's technological reach moves science and technology from basic and applied research all the way to new companies in the marketplace. These companies provide solutions and products that benefit our clients and the economy.



Battelle teamed with Primaxis Technology Ventures 18 months ago to form **Optimer Photonics Inc.**, an independent company that develops ultra-high performance optical components for the telecommunications industry. Optimer Photonics is now capitalizing on a licensed Battelle technology platform that is expected to enable large-scale, solid-state optical component integration.



Battelle formed **BattellePharma**, a specialty pharmaceutical company leveraging science and engineering for more effective medicines. Using its proprietary Mystic™ inhalation technology, BattellePharma develops its own respiratory treatment therapies and has development agreements with leading pharmaceutical companies to develop drugs for respiratory and systemic diseases.



Battelle created **OmniViz Inc.**— a 2002 R&D 100 Award winner—to combine highly diverse disciplines, such as advanced computing, visualization, chemistry, and biology, into sophisticated software-based solutions to help life sciences, health care, and chemical companies quickly transfer mountains of raw data into sources of high-value information for new product development. This provides a unique ability to discover, prioritize and test decisions or hypotheses, and leads to increased productivity, decreased time to market, and reduced business risks.



Battelle formed **Vitex Systems Inc.** to commercialize Battelle's Vacuum Polymer Technology. Vitex currently is developing two products—Barix™ encapsulation and Flexible Glass™ barrier substrates—to protect flat panel displays (FPDs). Barix encapsulation is an enabling technology for organic light emitting devices. Flexible Glass is expected to enable manufacturers to build thin, lightweight and flexible displays that will expand application possibilities for FPDs.



In 2001, Battelle formed **Velocys Inc.** to create products that solve some of the chemical industry's most daunting processing challenges. Velocys—with an exclusive license to Battelle's patented micro-channel technology—is developing devices that will significantly reduce capital and operating costs of many chemical operations, including high-temperature syntheses and gas-phase separations. Strategic industry partners have contributed the majority of Velocys' funding, and these Fortune 100 companies are working with Velocys in selected markets, providing market access and specifying product requirements.



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In December 2002, Battelle formed **Zivena Inc.**, a specialty pharmaceutical company focused on developing inhaled oncology products. Zivena plans to develop a suite of proprietary drugs for treating primary and metastatic lung tumors, and has been issued method patents covering the use of several classes of chemotherapy drugs to treat cancer by inhalation. Drugs covered by these patents represent a source of proprietary products with different mechanisms of action and proven efficacy in treating cancer. Zivena also has a proprietary delivery system designed to eliminate the emission of fugitive aerosols. Zivena's lead product, which is in Phase II clinical testing, is expected to be launched in 2006.